

## Small Signal Fast Switching Diodes



### FEATURES

- Silicon epitaxial planar diode
- Electrically equivalent diodes: 1N4148 - 1N914
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



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### APPLICATIONS

- Extreme fast switches

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### MECHANICAL DATA

**Case:** DO-35 (DO-204AH)

**Weight:** approx. 105 mg

**Cathode band color:** black

**Packaging codes / options:**

TR/10K per 13" reel (52 mm tape), 50K/box

TAP/10K per ammopack (52 mm tape), 50K/box

### PARTS TABLE

| PART   | ORDERING CODE          | TYPE MARKING | CIRCUIT CONFIGURATION | REMARKS                  |
|--------|------------------------|--------------|-----------------------|--------------------------|
| 1N4148 | 1N4148-TAP or 1N4148TR | V4148        | Single                | Tape and reel / ammopack |

### ABSOLUTE MAXIMUM RATINGS ( $T_{amb} = 25^{\circ}\text{C}$ , unless otherwise specified)

| PARAMETER                       | TEST CONDITION                                  | SYMBOL      | VALUE | UNIT |
|---------------------------------|---|-------------|-------|------|
| Repetitive peak reverse voltage |   | $V_{RRM}$   | 100   | V    |
| Reverse voltage                 |   | $V_R$       | 75    | V    |
| Peak forward surge current      | $t_p = 1 \mu\text{s}$                           | $I_{FSM}$   | 2     | A    |
| Repetitive peak forward current |   | $I_{FRM}$   | 500   | mA   |
| Forward continuous current      |   | $I_F$       | 300   | mA   |
| Average forward current         | $V_R = 0$                                       | $I_{F(AV)}$ | 150   | mA   |
| Power dissipation               | $I = 4 \text{ mm}, T_L = 45^{\circ}\text{C}$    | $P_{tot}$   | 440   | mW   |
|                                 | $I = 4 \text{ mm}, T_L \leq 25^{\circ}\text{C}$ | $P_{tot}$   | 500   | mW   |

### THERMAL CHARACTERISTICS ( $T_{amb} = 25^{\circ}\text{C}$ , unless otherwise specified)

| PARAMETER                                  | TEST CONDITION                            | SYMBOL     | VALUE       | UNIT |
|--|---|------------|-------------|------|
| Thermal resistance junction to ambient air | $I = 4 \text{ mm}, T_L = \text{constant}$ | $R_{thJA}$ | 350         | K/W  |
| Junction temperature                       |   | $T_j$      | 175         | °C   |
| Storage temperature range                  |   | $T_{stg}$  | -65 to +150 | °C   |

| <b>ELECTRICAL CHARACTERISTICS</b> ( $T_{amb} = 25^\circ C$ , unless otherwise specified) |  |            |      |      |      |               |
|--|--|------------|------|------|------|---------------|
| PARAMETER  | TEST CONDITION   | SYMBOL     | MIN. | TYP. | MAX. | UNIT          |
| Forward voltage  | $I_F = 10 \text{ mA}$  | $V_F$      |      |      | 1    | V             |
| Reverse current  | $V_R = 20 \text{ V}$   | $I_R$      |      |      | 25   | nA            |
|  | $V_R = 20 \text{ V}, T_j = 150^\circ C$  | $I_R$      |      |      | 50   | $\mu\text{A}$ |
|  | $V_R = 75 \text{ V}$   | $I_R$      |      |      | 5    | $\mu\text{A}$ |
| Breakdown voltage  | $I_R = 100 \mu\text{A}, t_p/T = 0.01, t_p = 0.3 \text{ ms}$                      | $V_{(BR)}$ | 100  |      |      | V             |
| Diode capacitance  | $V_R = 0 \text{ V}, f = 1 \text{ MHz}, V_{HF} = 50 \text{ mV}$                   | $C_D$      |      |      | 4    | pF            |
| Rectification efficiency   | $V_{HF} = 2 \text{ V}, f = 100 \text{ MHz}$                                      | $\eta_r$   | 45   |      |      | %             |
| Reverse recovery time  | $I_F = I_R = 10 \text{ mA}, i_R = 1 \text{ mA}$                                  | $t_{rr}$   |      |      | 8    | ns            |
|  | $I_F = 10 \text{ mA}, V_R = 6 \text{ V}, i_R = 0.1 \times I_R, R_L = 100 \Omega$ | $t_{rr}$   |      |      | 4    | ns            |

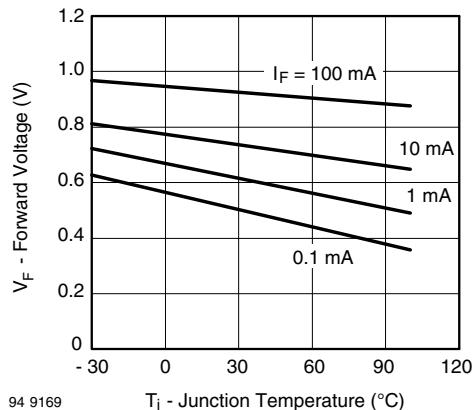
**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25^\circ C$ , unless otherwise specified)


Fig. 1 - Forward Voltage vs. Junction Temperature

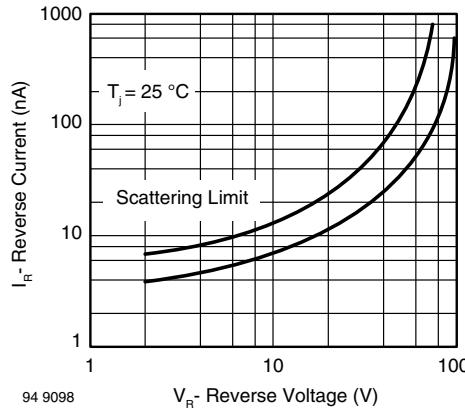


Fig. 3 - Reverse Current vs. Reverse Voltage

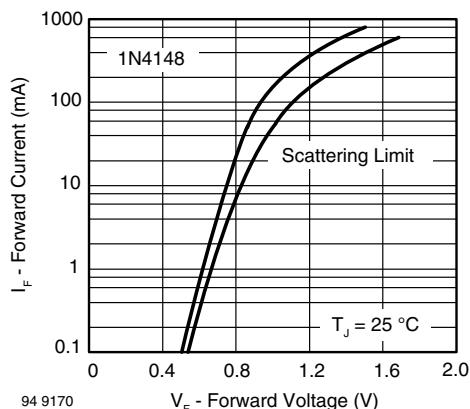
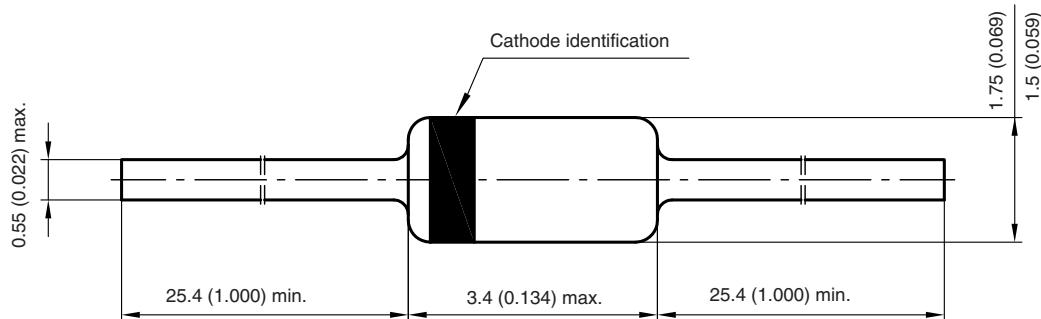


Fig. 2 - Forward Current vs. Forward Voltage

**PACKAGE DIMENSIONS** in millimeters (inches): **DO-35 (DO-204AH)**

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